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10/581,667	06/05/2006	Taichi Majima	0670-7075	4570
31780	7590	09/01/2009	EXAMINER	
ERIC ROBINSON			YU, LIHONG	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/581,667

Applicant(s)

MAJIMA, TAICHI

Examiner

LIHONG YU

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,5-7 and 9-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-7 and 9-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 6/5/2006, 09/21/2006, 09/12/2008, 01/29/2009
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claim 6 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 7 of copending Application No. 10/582,615.

Although the conflicting claims are not identical, they are not patentably distinct from each other because all the limitations in claim 6 of the instant application are disclosed in claim 7 of the 10/582,615 application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 6, 9 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Chung et al (US 5,214,656).

Consider claims 1 and 9:

Chung discloses a transmission device (*see Chung at Fig. 1 and col. 2, lines 30-33, where Chung describes a transmitter embodiment of an invention*) comprising:

- a redundant bit addition unit (*see Chung at Fig. 1, the channel encoder 121*) for adding redundant bits to a set of specific bits within a plurality of bits composing provided data to generate coded data, said specific bits having high importance (*see Chung at col. 4, lines 10-36, where Chung describes that the more important data is input to channel encoder 121 which adds redundant bits $r1$ to the data bits $m1$ to generate $m1+r1$ data bits*); and

- a modulation unit (*see Chung at Fig. 1, modulator 150*) for sending a modulated wave signal which has been generated based on the coded data generated by said redundant bit addition unit (*see Chung at col. 4, lines 37-68, where Chung describes that the coded output from the channel encoder 121 is provided to modulator 150*).

Consider claims 6 and 10:

Chung discloses a reception device for receiving an encoded data signal which is obtained by adding redundant bits to a set of specific bits within a plurality of bits composing data for transmission, said specific bits having high importance (*see Chung at Fig. 2 and col. 5, lines 27-47, where Chung describes a receiver 300 for the invention*), said reception device comprising:

- a demodulation unit for demodulating said received encoded data signal (*see Chung at Fig. 2 and col. 5, lines 27-47, where Chung describes a demodulator 350*);
- a symbol decision unit for performing a symbol decision at each Nyquist interval for the signal which has been demodulated by said demodulation unit (*see Chung at Fig. 5 and col. 5, lines 5-10, where Chung describes a symbol constellation mapper 132*);
- a bit conversion unit for converting a symbol value, which has been provided by performing the symbol decision by said symbol decision unit, into a bit value (*see Chung at Fig. 2 and col. 5, lines 27-47, where Chung describes channel decoder 331 for decoding the received more important signal*); and

- a data recovery unit for composing a data string by deleting the added redundant bit from the data of the bit value, which has been converted by said bit conversion unit, to restore original data (*see Chung at Fig. 2 and col. 5, lines 27-47, where Chung describes a source decoder 310 that provides the inverse function of source encoder of the transmitter to provide the received signal to display*).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chung et al (US 5,214,656) in view of Todoroki (US 5,457,705).

Consider claim 2:

Chung discloses the transmission device according to claim 1 above. Chung discloses the change of Euclidean distance (*see Chung at col. 6, lines 53-61, where Chung describes the minimum Euclidean distance*). However, Chung does not specifically disclose that a Euclidean distance of the data added with the redundant bit data becomes large.

Todoroki teaches a Euclidean distance of a data added with redundant bit data becomes large (*see Todoroki at col. 1, lines 17-32, where Todoroki describes adding one redundancy bit to each N-bit data will produce larger Euclidean distance*).

It would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Chung, and to point out the increased Euclidean distance, as taught by Todoroki, thus allowing for a better description of Chung's invention.

7. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chung et al (US 5,214,656) in view of Fox (US 4,901,072).

Consider claim 3:

Chung discloses the transmission device according to claim 1 above. Chung does not disclose said redundant bit addition unit adds the redundant bits to said set of specific bits of said provided data such that a Gray code is generated.

Fox teaches adding redundant bits in generation of Gray code (*see Fox at col. 1, lines 37-44*).

It would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Chung, and to add the redundant bits to said set of specific bits of said provided data such that a Gray code is generated, as taught by Fox, thus allowing for preventing ambiguity in data reading, as discussed by Fox (*see Fox at col. 1, lines 37-44*).

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chung et al (US 5,214,656) in view of Suzuki et al (US 5,818,875).

Consider claim 5:

Chung discloses the transmission device according to claim 1 above. Chung discloses a modulation unit (*see Chung at Fig. 1 and col. 4, lines 37-68, where Chung describes that the coded output from the channel encoder 121 is provided to modulator 150*). However, Chung does not specifically disclose the modulation is a multi-valued FSK method.

Suzuki teaches multi-valued FSK modulation (*see Suzuki at col. 1, lines 19-26, where Suzuki describes a multi-level FSK modulation method*).

It would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Chung, and to have a modulation that is a multi-valued FSK method, as taught by Suzuki, thus allowing for increasing the band-width efficiency, as discussed by Suzuki (*see Suzuki at col. 1, lines 19-26*).

9. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chung et al (US 5,214,656) in view of Suzuki et al (US 5,818,875) and Carsello (US 5,566,213).

Consider claim 7:

Chung discloses the reception device according to claim 6 above. Chung discloses a demodulation unit, said demodulation unit demodulates the received signal by converting the received signal into a signal of a voltage corresponding to a frequency of said received signal (*see Chung at Fig. 2 and col. 5, lines 27-47, where Chung describes a demodulator 350*).

However, Chung does not specifically disclose (1), said received signal is a signal which has been modulated according to a multi-valued FSK method, and (2), said symbol decision unit

performs the symbol decision by comparing the voltage of the signal, which has been demodulated by said demodulation unit, with preset threshold values.

Regarding item (1) above, Suzuki teaches multi-valued FSK modulation (*see Suzuki at col. 1, lines 19-26, where Suzuki describes a multi-level FSK modulation method*).

It would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Chung, and to have a modulation that is a multi-valued FSK method, as taught by Suzuki, thus allowing for increasing the band-width efficiency, as discussed by Suzuki (*see Suzuki at col. 1, lines 19-26*).

Regarding item (2) above, Carsello teaches a symbol decision unit that performs the symbol decision by comparing the voltage of the signal with preset threshold values (*see Carsello at Fig. 4, col. 4, lines 64-67 and col. 5, lines 1-7, where Carsello describes a symbol decision block 78 that compares the signal 76 to various threshold levels to determine what symbol the signal represents*).

It would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Chung, and to have the symbol decision unit that performs the symbol decision by comparing the voltage of the signal, which has been demodulated by said demodulation unit, with preset threshold values, as taught by Carsello, thus allowing for providing a very accurate frequency control signal, as discussed by Carsello (*see Carsello at col. 2, lines 10-15*).

10. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chung et al (US 5,214,656) in view of Todoroki (US 5,457,705), as applied to claim 2 above, and further in view of Suzuki et al (US 5,818,875).

Consider claim 11:

Chung in view of Todoroki discloses the transmission device according to claim 2 above. Chung discloses a modulation unit (*see Chung at Fig. 1 and col. 4, lines 37-68, where Chung describes that the coded output from the channel encoder 121 is provided to modulator 150*). However, Chung does not specifically disclose said modulation unit performs modulation according to a multi-valued FSK method.

Suzuki teaches multi-valued FSK modulation (*see Suzuki at col. 1, lines 19-26, where Suzuki describes a multi-level FSK modulation method*).

It would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Chung, and to have a modulation that is a multi-valued FSK method, as taught by Suzuki, thus allowing for increasing the band-width efficiency, as discussed by Suzuki (*see Suzuki at col. 1, lines 19-26*).

11. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chung et al (US 5,214,656) in view of Fox (US 4,901,072), as applied to claim 3 above, and further in view of Suzuki et al (US 5,818,875).

Consider claim 12:

Chung in view of Fox discloses the transmission device according to claim 3 above. Chung discloses a modulation unit (*see Chung at Fig. 1 and col. 4, lines 37-68, where Chung describes that the coded output from the channel encoder 121 is provided to modulator 150*). However, Chung does not specifically disclose said modulation unit performs modulation according to a multi-valued FSK method.

Suzuki teaches multi-valued FSK modulation (*see Suzuki at col. 1, lines 19-26, where Suzuki describes a multi-level FSK modulation method*).

It would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Chung, and to have a modulation that is a multi-valued FSK method, as taught by Suzuki, thus allowing for increasing the band-width efficiency, as discussed by Suzuki (*see Suzuki at col. 1, lines 19-26*).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LIHONG YU whose telephone number is (571) 270-5147. The examiner can normally be reached on 8:30 am-7:00 pm Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on (571) 272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Lihong Yu/
Examiner, Art Unit 2611
/Shuwang Liu/
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